

Study Guide

For use with pages 334–339

GOAL Use proportions to solve percent problems.**SOLVING PERCENT PROBLEMS**You can represent “ a is p percent of b ” using the proportion

$$\frac{a}{b} = \frac{p}{100}$$

where a is a part of the base b and $p\%$, or $\frac{p}{100}$, is the percent.**EXAMPLE 1** Finding a Percent

What percent of 9 is 3?

Solution

$$\frac{a}{b} = \frac{p}{100}$$

Write proportion.

$$\frac{3}{9} = \frac{p}{100}$$

Substitute 3 for a and 9 for b .

$$100 \cdot \frac{3}{9} = 100 \cdot \frac{p}{100}$$

Multiply each side by 100.

$$33\frac{1}{3} = p$$

Simplify.

Answer: 3 is $33\frac{1}{3}\%$ of 9.**EXAMPLE 2** Finding a Part of a Base

What number is 90% of 340?

Solution

$$\frac{a}{b} = \frac{p}{100}$$

Write proportion.

$$\frac{a}{340} = \frac{90}{100}$$

Substitute 340 for b and 90 for p .

$$340 \cdot \frac{a}{340} = 340 \cdot \frac{90}{100}$$

Multiply each side by 340.

$$a = 306$$

Simplify.

Answer: 306 is 90% of 340.

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EXAMPLE 3 Finding a Base

In your school, 336 students play an instrument. The students who play an instrument comprise 32% of the student body. How many students attend your school?

Solution

In this situation, 336 is a part of the total number of students, which is the base.

$$\frac{a}{b} = \frac{p}{100} \quad \text{Write proportion.}$$

$$\frac{336}{b} = \frac{32}{100} \quad \text{Substitute 336 for } a \text{ and 32 for } p.$$

$$336 \cdot 100 = 32 \cdot b \quad \text{Cross products property}$$

$$33,600 = 32b \quad \text{Multiply.}$$

$$1050 = b \quad \text{Divide each side by 32.}$$

Answer: There are 1050 students at your school.

Exercises for Examples 1–3

Use a proportion to answer the question.

1. What percent of 12 is 3?
2. What percent of 25 is 20?
3. What percent of 90 is 42?
4. What percent of 85 is 17?
5. What number is 35% of 60?
6. What number is 12% of 125?
7. What number is 42% of 150?
8. What number is 8% of 625?
9. 300 is 24% of what number?
10. 15 is 60% of what number?
11. 20 is 40% of what number?
12. 70 is 35% of what number?